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The University of Oklahoma PH.D. 1983

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AN EXAMINATION OF THE ASSOCIATION OF CERTAIN PERSONALITY CONSTRUCTS BETWEEN THE PERSONALITY ASSESSMENT SYSTEM AND THE MYERS-BRIGGS TYPE INDICATOR

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AN EXAMINATION OF THE ASSOCIATION OF CERTAIN PERSONALITY CONSTRUCTS BETWEEN THE PERSONALITY ASSESSMENT SYSTEM AND THE MYERS-BRIGGS TYPE INDICATOR

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Abstract

The purpose of this study was to examine the construct validity of the Personality Assessment System (PAS) by comparing it with the Myers-Briggs Type Indicator. Since the Wechsler Adult Intelligence Scale(WAIS) is used as the assessment instrument for the PAS, information concerning MBTI type performance on WAIS subtest scales was also obtained. The sample consisted of 140 male high school students attending Philadelphia schools in 1958. The results indicated the following: (a) the PAS construct of a Mechanical-Procedural dimension of personality is similar to the MBTI construct of Sensing-Intuitive, (b) the PAS construct of Internalizer-Externalizer is not the same as the MBTI construct of Introversion-Extroversion, (c) Intuitive types(MBTI) scored higher on the Information subtest of the WAIS than Sensing types, (d) Thinking and Feeling types(MBTI) did not score significantly different on the Arithmatic or Similarities subtests of the WAIS, and (e) Perceptive(MBTI) individuals did not score significantly different than Judging(MBTI) individuals on the Comprehension subtest of the WAIS. Correlations between PAS deviation scores and MBTI scores were not significant, while certain correlations between MBTI Introversion-Extroversion and Sensing-Intuitive dimensions and WAIS subtest scores were significant.

Introduction

Counseling Psychology has as its foundation the assumption of normal personality development, yet appropriate theoretical models of that development have been lacking. As a correlary and consequence, normal personality theory and assessment have generated a paucity of literature in comparison to that of abnormal personality. What literature is available is generally focused on somewhat narrow aspects of normal development such as moral development or cognitive style.

The Personality Assessment System(PAS) of John Gittinger (Winne and Gittinger, 1973) is a model description of the development of normal personality. Gittinger has undertaken the difficult task of attmepting to account for individual differences. The result is a theory of relative complexity which has contributed to its anonymity among psychologists. Acceptance of the system has been further restricted by its use in an unusual context of an intelligence test, the Wechsler Adult Intelligence Scale(Wechsler, 1955), as its assessment instrument.

For the PAS to be accepted as a valid theory of normal development it would seem essential first that concerns about the use of the Wechsler Adult Intelligence Scale(WAIS) as a personality assessment device need to be addressed. Secondly, the correspondence of PAS formulations with the results of other personality measures needs to be examined to establish construct validity. And finally, predictive validity investigations need to be undertaken.

In this study the Myers-Briggs Type Indicator(MBTI), a widely used self-report measure of personality type, will be compared to the PAS. Based on Jungian typology the MBTI has been used in over 400 studies. The MBTI was chosen because in addition to being focused on normal personality, the descriptions of MBTI types sound quite similar to descriptions of PAS constructs.

The Personality Assessment System

The Personality Assessment System was developed from the observations of John Gittinger. A perceptive clinician, Gittinger noticed apparent connections among personality characteristics and performance on WAIS subtests. These observations led to the fundamental assumption of the PAS that individuals have innate responding and perceptual patterns and that current behavior represents attempts by the individual to minimize the significance of their weaknesses. The WAIS is postulated to be a measure of both the abilities and the resulting behaviors and as such can be used as a personality measure.

Three dimensions of personality are postulated by the PAS: the Intellectual, the Mechanical-Procedural, and the Social-Interpersonal. The interactions of these three domains cp,½rose the primary response state of the individual. In the Intellectual domain an individual may be described as an Internalizer or an Externalizer. An Internalizer focuses attention inward, responding to the internal world of abstract ideas, thoughts, and fantasies. Behaviorally Internalizers can appear passive as they respond primarily to internally located stimuli. Externalizers focus attention on the external world around them. As their intellectual satisfaction is

derived from external sources, so too is their emotional satisfaction, rendering them dependent on their environment for psychological satisfaction(Winne and Gittinger, 1973).

Individuals are described as Regulated or Flexible on the Mechanical-Procedural dimension of personality. This domain describes the stimulation a person responds to, how much, what kind, how it is organized, and more generally how a person attempts to solve tasks of a mechanical or procedural nature. Regulated individuals react to a limited number of specific, well defined stimuli on which they can concentrate and focus. This tendency to restruct awareness effects emotional stimuli as well; Regulated individuals appear emotionally insulated and self-centered. Flexible individuals have the ability to respond simultaneously to a wider variety of stimuli. They see the world in shades of grays and are aware of subtleties and nuances of situations. They are described as intuitive and imaginative.

The Social-Interpersonal dimension is associated with a capacity to adapt initial response styles to the roles required by the cultural milieue in which they are born and raised. It also includes the image a person projects and its effect on observers. Role-Adaptive individuals appear magnetic, charming, and captivating. They are people who move easily in a variety of social situations assuming the presence and apparently the values required for acceptance by each group. Role-Uniform individuals apply their limited repertoire of roles to whatever situations they encounter whether or not the roles are appropriate.

As a result of interaction with the environment, a process of compensation of the initial or primary response state can occur. Compensation represents the individual's initial responses to the pressure of the environment to change in some way from his/her primary responding style. This is accomplished by learning skills or responding patterns which are not part of the original personality structure. They are an individual's attempts to adapt to a variety of situations, thus increasing personal effectiveness. A person may, however, be uncompensated, fail to acquire new abilities, resulting in the accentuated use of their original abilities. The process of compensation results in what is called the Basic level of personality.

The Basic personality structure stabilizes before adolescence and then is itself subject to change through a process called modification. The interaction of the Basic personality and modifications result in a Surface level of personality. This third level of adjustment is less stable than the previous two, being more likely to break down under stress.

The result of compensation and modification of the Primitive level of personality is to produce a three-level, three dimensional description of personality. The interaction of these variables results in more than 500 permutations of PAS profiles. This diversity makes it apparent that the PAS is capable of describing individual differences among normal individuals.

Though the Wechsler-Bellevue Intelligence Scale Form I(Wechsler, 1944) was originally used, the Personality Assessment System currently utilizes the WAIS to derive personality profiles.

Winne and Gittinger(1973(state:

> "The WAIS is assumed to measure the patterns of behaviors that reflect the individual's strengths and weaknesses and thus one can infer personality from an intelligence test(WAIS) . . . The psychometric premise underlying the Personality Assessment System is that the Wechsler patterns provide valued information that can be employed to spell out the specific behaviors mentioned above. The psychometric premise, combined with the psychological premise leads to the conclusion that the Wechsler battery is, then not only a source of varied patterns of intellectual functioning, but also a valid personality measure."

While WAIS subtest scatter analysis systems have been devised for a variety of purposes, they generally hve been criticized for some common flaws; low subtest score reliability(Jones, 1956), high standard error of differences between subtests(McNemar, 1957), and a limited number of factors in the WAIS structure (Cohen, 1957; Shaw, 1967). These concerns will be addressed below.

Saunders(Saunders, 1959; 1960,a,b; Klinger and Saunders, 1975) has conducted systematic research which has challenged the assumption of a small number of factors in the WAIS structure. He has demonstrated through item analysis and subtest analyses of the test that there are between seventeen and twenty factors in the WAIS.

The PAS computes an intra-individual average of the subtest scores, the Normal Level. Deviations of individual subtest scores from the Normal Level are used to determine PAS profiles. Since the Normal Level is reported by Saunders(1967) to have a reliability comparable to the reliability of the WAIS total score, r=.97, reliability of the scores of individual subtests and the standard error of differences between subtests are no longer concerns. The Normal Level represents a unique contribution of the PAS to subtest scatter analyses.

While research focused on the WAIS and its use as a measure of personality is extensive, studies of PAS constructs, predictive validity, and similarity of profiles in specified groups have been somewhat limited. York(1963), Willis(1969), Tetrault(1973, Goodnow(1961), Soltz(1970), and Martin and Saunders(1969) have all compared profiles of homogeneous groups. They have consistently reported the similarity of PAS profiles of homogeneous group members. In a recent study Rodd, Townsend, and Hoelscher(1980) reported similarities in the profiles of subjects classified as alcoholics. Bem(1982) describes these reference groups as a method for cross-validating findings using archival data and states that it has produced the strongest evidence in favor of the PAS.

Studies which address the construct validity of the PAS are noteworthy. Wagner(1976) attempted to relate the PAS constructs of Internalizer-Externalizer with the classical concepts of Introversion-Extraversion(Carrigan, 1960). Wagner concluded that while the results supported the hypothesis of overlap between Introversion-Extroversion and Internalizer-Externalizer, the concepts were not equivalent.

Turner, Wellerman, and Horn(1976) hypothesized that subjects with comparable PAS profiles (7 primitive types were used) should have similar profiles on the 16 P-F and the Minnesota Multiphasic Personality Inventory. Performance of the PAS types on individual scales of both measures were predicted. The authors reported that virtually all predictions of correlations between the PAS Primitive types and the MMPI or 16 P-F were unsupported. Different Basic and Surface level groups did not differ on any MMPI or 16 P-F scales. However, Saunders (1982) indicated that the Turner, et al. study represented an oversimplification of the PAS resulting in the use of inappropriate hypotheses, dependent measures, design and analysis of results.

Winne and Gittinger(1973) reported research conducted by Thetford and Schuaman related to the Regulated-Flexible dimension of the PAS. Subjects were administered the WAIS and asked to select a description which they believed to be most like themselves. These descriptions were of the four Basic personality types of the R-F dimension. Five of the nine hypotheses generated proved to be significant at the .05 level.

Studies on predictions of performance based on PAS profiles have been conducted. Cartwright(1969) demonstrated that the PAS may be used effectively as a predictor of risk-taking behavior using Torrance and Zeller Life Experience Inventory. Krauskopf and Bielefield(1968) used the PAS successfully to predict achievement in a senior course in psychological testing. Bielefield(1968) examined the relationship between PAS variables and concept attainment. Three concept attainment tasks were used as criterion variables. He reported that while anxiety seemed to be the most significant variable operating, the A-U dimension

proved useful in predicting success. Saunders, Kaplan, and Rodd(1980) reported an innovative pilot program which used PAS profiles in marriage counseling to predict therapeutic outcome. While the results of these studies are encouraging, more studies need to be conducted to substantiate the predictive ability of the system.

Myers-Briggs Type Indicator

The Myers-Briggs Type Indicator was chosen as an instrument to compare to the PAS because it is a widely used self-report personality measure and it describes aspects of personality that sound much like PAS descriptors. Myers(1962, pg.72) states,

> ". . . the effects of E-I(Extrover-Introvert) sometimes seem evident in the cradle in the difference between the contemplative baby and a sociable baby . . . and the effects of S-N (Sensing-Intuitive) sometimes crop out early in the difference between the imaginative and literal interpretation of verbal materials."

This appears to be congruent with statements by Winne and Gittinger (1973, pp. 6-9),

> "The natural frame of reference for the Externalizer lies in the world outside himself . . . His reality consists of real people and real things, and he relates to them spontaneously and directly . . . In contrast, the natural frame of reference for the Internalizer(I) is inwardly directed; his reality consists primarily of what goes on within himself . . . A primitive A primitive F(Flexible) can function best if

> he has a wide range of activities that do not depend on specific, literal, or imitative abilities . . . Characteristically, the primitive F is sensitive, spontaneously responsive and insightful."

The Myers-Briggs Type Indicator(Form F) is a 166 item forced-choice self-report inventory which was developed to assess personality type as described by Jung. In addition to providing scores for the attitudes of introversion-extroversion and the functions of thinking and feeling, sensing and intuition, two additional categories, not part of Jung's original typology, judging and perceiving are included.

The items which comprise the MBTI seek to measure typological differences by the use of behavior reports, value judgments, and word pairs. Continuous scores are computed which reflect the strength of the preference an individual has on each of the four dimensions.

Carlyn(1977) notes that numerous studies have been conducted comparing the constructs of the MBTI with those of the Gray-Wheelwright, another measure of Jungian typology, and the O. J. Harvey "This I believe" test of conceptual systems. There is a general consensus that the MBTI has been demonstrated to adequately measure the constructs of psychological type as postulated by Jung.

It would appear that the MBTI is an appropriate measure to use to explore the validity of Personality Assessment System constructs. In order to address questions concerning the construct validity of the PAS, relationships between the system and the Myers-Briggs Type Indicator will be hypothesized.

Method

Subjects:

Subjects were male students enrolled in Philadelphia metropolitan high schools in 1958. They were selected on the basis of providing approximately equal numbers of the Myers-Briggs Type Indicator (MBTI) single scale types, i.e. extrovert, introvert, intuitive, sensing, thinking, feeling, judging, perceiving. The selected students were then administered the Wechsler Adult Intelligence Scale(WAIS) and Personality Assessment System(PAS) profiles were derived. The 140 subjects included in this study represent individuals for whom MBTI and WAIS data were complete. While data for this study were collected in 1958, the results remain relevant. The MBTI form F remains the most widely used version of the test and the WAIS continues to be used as the PAS assessment device. Subjects ranged in age from 16-19(mean=17.09) years of age and had, on the average, 11 years of education(mean.10.84).

Instruments:

The Wechsler Adult Intelligence Scale(Wechsler, 1955, 1958) is used to derive Personality Assessment System profiles. A nine symbol code is derived from WAIS subtest scores reflecting primitive abilities and two levels of adjustment (compensation and modification) on three personality dimensions,(Intellectual, Mechanical-Procedural, and Social). The vocabulary subtest is not used in the PAS as it is considered too culture-bound to produce results useful cross-culturally. The digit symbol sub-test of the WAIS and the resulting construct it is said to measure in the PAS were also not used in this study.

Individual PAS scores on the Intellectual dimension(internalizer-

Externalizer) and the Mechanical-Procedural dimension(Regulated-Flexible) were utilized in the hypotheses of this study. Scores on the Social dimension(Role Adaptive-Role Uniform) were not used as there does not appear to be an equivalent construct measured by the Myers-Briggs Type Indicator. Basic level adjustments were used in the hypotheses as research suggests that individuals are most likely to report themselves as being similar to descriptions of this level of adjustment(Winne and Gittinger, 1973).

The Myers-Briggs Type Indicator is a self-report inventory developed to assess personality type as described by Jung. The most widely used version of the Indicator, Form F, which has been used in extensive research studies, was used in this research. Two types of scores are reported for the Myers-Briggs, dichotomous and continuous. Continuous scores are calculated for each of the four dimensions; Extroverted-Introverted, Intuitive-Sensing, Thinking-Feeling, and Judging-Perceiving are used in this study. Dichotomous scores report only the preference with no indication as to how strong it is.

Two aspects of reliability for the MBTI are reported, measures of internal consistency and stability. Internal consistency coefficients ranging from .76 to .82(E-I), .75 to .87(S-N), .69 to .89(T-F), and .80 to .84(J-P) have been reported based on the continuous scores (Webb, 1964; Myers, 1962). Test-retest reliabilities for continuous scores are reported by Stricker and Ross (1963); .76 to .78(E-I), .74 to .80(S-N), .64 to .74(T-F), and .78 to .84(J-P).

Hypotheses and Data Analyses:

The purpose of the present study was to test the validity of certain Personality Assessment System constructs. The Myers-Briggs Type Indicator was chosen to compare to the PAS as it appears to describe

similar constructs. Four hypotheses were postulated; 1) Basic level Internalizers(PAS) will score as Introverts on the MBTI, 2) Basic level Externalizers(PAS) will score as Extroverts(MBTI), 3) Basic level Flexible(PAS) individuals will score as Intuitive types(MBTI), 4) Basic level Regulated(PAS) individuals will score as Sensing types(MBTI).

These hypotheses were tested using Chi-square analyses. In order to improve the stability of the data, cut-off scores were determined for each of the 4 MBTI continua based on percentile norms for high school students(Myers, 1962). Scores falling in the middle third of each MBTI continuum were eliminated from each analysis as they reflect relatively weak scores. Thus the N for each of the MBTI categories used in this analysis were smaller than those in the correlational analyses.

In order to explore broad relationships between PAS scores and MBTI scores one general hypothesis was postulated; 5) there are significant correlations between scores on the MBTI and deviation scores from Normal Level in the PAS. A canonical correlation was used to test this hypothesis. It would appear that this type of analysis would allow for the emergence of yet undefined relationships between the two systems. All MVTI scores were included in this analysis and eigenvalues and canonical correlations were calculated.

A concommitant goal of this study was to examine the relationship between MBTI types and scores on WAIS subtest of abilities. Four hypotheses were postulated to achieve thi goal. Hypothesis 6: Feeling types (MBTI) are able to see and appreciate the qualitative differences of situations and things and base judgments on their subjective value of those differences. Thinking types seek to make impersonal decisions using their ability to see things in terms of black and white. The

Similarities subtest(WAIS) involves the ability to perceive abstract relationships, to see things in shades of grey, and to appreciate the qualitative differences in things. Thus, Feeling types on the MBTI will score higher on the Similarities subtest/(WAIS) than those scoring as Thinking types. Hypothesis 7: In the Judging type/(MBTI) in order to come to a conclusion, ongoing perception must be shut off for a period of time. The evidence is collected and anything more is irrelevant and immaterial since the goal is to arrive at a conclusion. The Perceiving type MBTI places importance on the process of deciding. Conclusions are postponed in order to ensure the collection of all pertinent information. The Comprehension subtest reflects cultural conventions and values which serve as the basis for decisions for Judging types. Thus, Judging types will score higher on the Comprehension subtest(PAS) than Perceiving types.

Hypothesis 8: Information, as measured by the Wechsler subtest, serves as the basis for the ideas of association that the Intuitive MBTI uses as a means of perceiving possibilities. Sensing types do not utilize a stored data base of information as their perceptions are immediately processed through the senses. Thus, Intuitives(MBTI) will score higher than Sensors/(MBTI) on the Information subtest/(WAIS).

Hypothesis 9: Thinking/(MBTI) represents the organization of facts and ideas while feeling reflects the bestowing of a personal subjective value on things. Thinking types will do better on the Arithmetic subtest as they are more inclined and disciplined to carry out the logical processes required to manipulate the symbols used in the subtest. Thus, Thinking types(MBTI) will score higher than Feeling types(MBTI) on the Arithmetic subtest(WAIS).

The rationales for generating these hypotheses were based on the

MBTI descriptions of type and the PAS descriptions for what each of the WAIS subtests measure(Winne and Gittinger, 1973). Two tailed T-tests of mean differences were used to investigate these hypotheses.

In addition to these analyses, correlations between MBTI type and WAIS subtest scores were calculated. It is hoped that these correlations may provide additional information about MBTI type and performance on ability tests. It is also hoped that these results will serve as a stimulus for further research.

Results

Shi-square analyses of the relationships of Personality Assessment System Basic level categories and Myers-Briggs types are reported in Tables 1 and 2.

Insert Tables 1 and 2 about here

As hypothesized, the relationship of PAS Flexible and Regulated categories with MBTI Intuitive and Sensing Types proved significant(p .01). The frequency of PAS Flexibles reported as Intuitive types(MBTI) and PAS Regulateds as Sensing types(MBTI) reflect an over representation based on expected cell frequency estimates. The Chi-square analysis of the relationship between PAS Externalizers and Internalizers and Myers-Briggs Extraverts and Introverts was not significant at the .05 level.

Canonical correlations among PAS deviation scores and Myers-Briggs continuous scores are reported in Table 3. Probabilities, canonical correlations, and eigenvalues of the 4 correlations were computed.

Insert Table 3 about here

Probabilities did not reach the significant level of .05 for any of the 4 correlations.

Performance of Myers-Briggs Types on specific WAIS subtests are reported in Table 4. Four two-tailed T-tests were performed with only one demonstrating significance at the .05 level.

Insert Table 4 about here

Intuitives scored significantly higher(p .001) than Sensing types on the Information subtest. Performance of Thinking and Feeling types was not significantly different on either Arithmetic or Similarities subtests. Performance of Perceptive types was not significantly different from Judging types on the Comprehension subtest.

Correlations among MBTI types and WAIS subtest scores are reported in Table 5. Correlations were computed for the 4 MBTI continua and 9 WAIS subtests used in this study.

Insert Table 5 about here

Myers-Briggs Introversion-Extroversion scores were significantly correlated in a positive direction with the WAIS Similarities and Picture Completion subtests. Myers-Briggs Sensing-Intuitive scores were significantly correlated in a negative direction with eight of the nine WAIS subtests (all but Picture Completion subtest). MBTI Judging and Perceiving and Thinking and Feeling scores were not significantly correlated with any of the WAIS subtests.

Discussion

The results of the present study suggest that there is a relationship between the PAS construct of a Mechanical-Procedural dimension of personality and the Myers-Briggs Type Indicator functions of Intuition and Sensing. More specifically, individuals scoring as Flexibles in the PAS most often score as Intuitives on the MBTI while PAS Regulated individuals score as Sensing types. These findings are significant in that they establish a relationship between a self-report measure and the PAS and lended support to the validity of a PAS construct. This finding needs to be replicated using other age groups as well as females in order to establish the generalizability of these results.

The results of this study further indicate that the PAS construct of an Intellectual dimension of personality(Internalizer-Externalizer) and the MBTI function of Extroversion-Introversion are not the same. It is speculated that the PAS Intellectual dimension is a broader construct than the MBTI function Extroversion-Introversion. The PAS construct includes the focus of an individual's attention and a description of the nature of their intellectual activity.

Canonical correlations among PAS/WAIS subtest deviations from Normal Level and MBTI continuous scores were nonsignificant at the .05 level. This type of analysis was conducted to investigate the broadest of possible relationships between the PAS and the MBTI. It is speculated that the use of Normal Level deviation scores as part of the canonical correlation data set may have resulted in the nonsignificant findings.

Other means of data analysis may provide more significant results.

It was hypothesized that Intuitives(MBTI) use stored information as a basis for their intuitive judgments. This hypothesis was supported by the results of this study as Intuitives scored significantly higher than Sensing(MBTI) types on the WAIS Information subtest. This result establishes a relationship between personality characteristics as measured by the MBTI and performance on WAIS subtests. Although three other hypothesized relationships between type and performance were not significant, it would seem that other hypotheses could be generated linking MBTI type and performance. The MBTI is often used in career counseling and it would be useful in that context to be able to establish relationships between the MBTI and WAIS performance. MBTI type performance on other ability measures should also be explored.

Correlations of MBTI continuous scores and performance on WAIS subtests produced interesting results. MBTI Sensing-Intuitive dimension scores (S high, N low) were significantly correlated in a negative direction with eight of the WAIS subtests. It should be noted that including MBTI scores from all subjects resulted in scores averaging on the Sensing end of the MBTI continuum for Sensing-Intuitive. It would be useful to establish whether scoring as a Sensing or Intuitive type was correlated with overall scores of intelligence. MBTI Extroversion-Introversion (E high, I low) dimension scores were significantly correlated in a positive direction with WAIS Similarities and Object Assembly Subtests. It is unclear as to what the relationship is between this MBTI dimension and performance on these WAIS subtests.

In summary, the results obtained provide limited support for the Personality Assessment System construct of a Mechanical-Procedural dimension

of personality(Regulated-Flexible). A case is thus made for the further validation of PAS constructs. In addition, information concerning MBTI type and performance on WAIS subtests have been reported. It is hoped that these results might stimulate research on MBTI type and differential abilities. In assessing the results of this study it must be noted that only two hypotheses proved to be significant. It would seem that the worth of the PAS as a theory of normal personality would warrant continued reserach in the face of these results.

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Table 1

Association of Myers-Briggs Intuitive and Sensing Types and PAS Basic Level Flexible and Regulated Categories

Myers-Briggs Type	PAS Variable: Flexible Freq.	Flexible %	Regulated Freq.	Regulated %	Sum N	Sum %
Intuitive	48	42.86	12	10.71	60	53.57
Sensing	29	25.89	23	20.54	52	46.43
Sum =	77	68.75	35	31.25	112	100.00

Chi Square	7.613
Phi	0.261
Prob.	0.0056

Table 2

Association of Myers-Briggs Introvert and Extrovert Types and PAS Basic level Internal and External Categories

Myers-Briggs Type	PAS Variable: External Freq.	External %	Internal Freq.	Internal %	Sum N	Sum %
Introvert	25	20.16	46	37.10	71	57.26
Extrovert	26	20.97	27	21.77	53	42.74
Sum =	51	41.13	73	58.87	124	100.00

Chi Square	2.403
Phi	-0.139
Prob.	0.1211

Table 3

Canonical Correlation Analysis of PAS Deviation Scores

With Myers-Briggs Type Indicator Variables

	Canonical Correlation	Eigenvalue[a]	DF	Prob. F
1.	0.4234	0.1792	36	.0578
2.	0.2822	0.0796	24	.4508
3.	0.2592	0.0672	14	.5076
4.	0.1741	0.0303	6	.6684

[a]Sum of Eigenvalues = .36

Table 4

Myers-Briggs Type Performance on WAIS Subtests

Myers-Briggs Type	N	M	WAIS Subtest SD	Prob.
			Information	
Intuitive	60	14.65	1.85	.0001
Sensing	52	13.19	1.88	
			Arithmetic	
Thinking	73	13.49	2.96	0.8787
Feeling	56	13.41	3.13	
			Similarities	
Thinking	73	12.42	2.42	0.6468
Feeling	56	12.61	1.97	
			Comprehension	
Perceptive	55	13.49	1.94	0.7250
Judging	54	13.61	1.60	

Table 5

Correlations between WAIS Subtest Scores and Myers-Briggs Type Indicator Scores

	Extrovert-Introvert[a]	Sensing-Intuitive[a]	Feeling-Thinking[a]	Judging-Perceiving[a]
Digit Span	0.1238	-0.2097*	0.14306	0.03316
Arithmetic	0.1426	-0.2503*	-0.0041	-0.0331
Information	0.1281	-0.3349*	-0.0851	0.0214
Black Design	0.1079	-0.2048*	-0.0023	0.0675
Similarities	0.2107*	-0.3138*	0.1081	-0.1636
Comprehension	0.1269	-0.2987*	-0.0574	0.0513
Picture Arrangement	0.0521	-9.3928*	0.0574	-0.0585
Picture Completion	0.1136	-0.0926	0.0256	-0.1299
Object Assembly	0.1887*	-0.1863*	0.0362	-0.0151

$\underline{P}$ .05

[a]First named high, second low

Appendix A

Prospectus

THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

AN EXAMINATION OF THE ASSOCIATION OF CERTAIN PERSONALITY CONSTRUCTS BETWEEN THE PERSONALITY ASSESSMENT SYSTEM AND THE MYERS-BRIGGS TYPE INDICATOR

A PROSPECTUS

SUBMITTED TO THE GRADUATE FACULTY

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DOCTOR OF PHILOSOPHY

BY

KEVIN PATRICK AUSTIN

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A PROSPECTUS:

AN EXAMINATION OF THE ASSOCIATION OF CERTAIN PERSONALITY CONSTRUCTS BETWEEN THE PERSONALITY ASSESSMENT SYSTEM AND THE MYERS-BRIGGS TYPE INDICATOR

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INTRODUCTION

The need for a complete and valid theory of normal personality and an instrument to assess such development is evident. Research regarding the validity of various theories of normal personality has been limited by the lack of widely accepted direct assessment tools. The Personality Assessment System (PAS) of John Gittinger (Winne and Gittinger, 1973) offers both a theory of normal personality development and a means of assessment through the use of the Wechsler Adult Intelligence Scale (Wechsler, 1955).

The PAS itself remains unfamiliar to most professionals. This relative anonymity is usually explained by the relative complexity of the system and its use of the Wechsler Adult Intelligence Scale (WAIS), in an unusual context, as its assessment instrument. This paper will provide a professional unfamiliar with the PAS a basic understanding of both the theory and its use of the WAIS.

A concomitant goal of this paper is to contribute information regarding the use of the WAIS as a measure of personality. This will be achieved by examining the relationship between PAS personality variables as measured by the WAIS and those of the Myers-Briggs Type Indicator (Myers, 1966), a well known self-report measure of personality. If support can be found for the relationship between personality traits derived from WAIS scores and a self-report personality inventory, then the construct validity of the PAS itself is enhanced.

The Myers-Briggs Type Indicator (MBTI) was selected because of the apparent relationship between the constructs measured by the MBTI and the PAS. The MBTI manual (Myers, 1962) describes aspects of personality that sound much like PAS descriptions. For example, Myers (1962, p.72) states,

> . . . the effects of EI (Extrovert-Introvert) sometimes seem evident in the cradle, in the difference between the contemplative baby and a sociable baby . . . and the effects of SN (Sensing-Intuitive) sometimes crop out early in the difference between the imaginative and literal interpretation of verbal materials . . .

This appears to be quite congruent with statements by Winne and Gittinger (1973, pp. 6-9(.

> The natural frame of reference for the Externalizer lies in the world outside himself . . . His reality consists of real people and real things, and he relates to them spontaneously and directly . . . In contrast, the natural frame of reference for the Internalizer (I) is inwardly directed; his reality consists primarily of what goes on within himself . . . A primitive F (Flexible) can function best if he has a wide range of activities that do not depend on specific, literal, or imitative abilities . . . Characteristically, the primitive F is sensitive, spontaneously responsive and insightful.

This study will examine the MBTI and the PAS and make some hypotheses about relationships between the two measures. Three types of hypotheses will be presented representing three different ways the relationships between the measures may be examined. One set of hypotheses will focus on the performance of different MBTI types on subtest ability tasks of the WAIS. As a result of this examination we should learn more about MBTI types and how they may perform differently on various ability tests. We should also learn how individuals with particular abilities may describe themselves as indicated by their MBTI type.

As stated previously, there are similarities between the descriptions of MBTI and PAS types. A second set of hypotheses will be postulated to test the relationships between specific constructs of each system. As a result of this type of examination we should learn whether the MBTI and PAS measure similar constructs or have similar sounding descriptions of different personality attributes. The Myers-Briggs Type Indicator and the Personality Assessment System attempt to describe and measure the broad concept of normal personality attributes. A third type of hypothesis will seek to establish more general relationships between the two systems. It is hoped that these findings will encourage research which will further illuminate the relationships between the PAS and the MBTI.

Purpose

Personality theory and its assessment is the focus of much attention and research in the field of psychology. The body of writings on Freudian, Adlerian and other theories of personality development are extensive. Comparable amounts of research have been conducted on personality assessment instruments used in the field such as the Minnesota Multiphasic Personality Instrument, The Rorschach Test, and the Thematic Apperception Test. The result of this research is a virtual wealth of information on theories of abnormal personality development and assessment.

The body of literature focused on the development of normal personality and its assessment is limited. While people such as Maslow and Jourard have written on the development of the healthy personality, a comprehensive theory of normal personality and assessment has yet to be presented. Counseling psychologists whose stated emphasis is work with normal individuals are left without theoretical framework.

The purpose of this study is to present in a concise and compre-

hensible manner the Personality Assessment System of John Gittinger. The PAS appears to best fill the void in our attempts to understand individual differences. It is hoped that a succinct presentation of the PAS will provide psychologists with a theory base and means of assessment from which to understand normal development.

Questions concerning the validity of the personality constructs of the PAS must be addressed in order for the system to have utility for psychologists. In order to address these questions, relationships between the constructs of the PAS and the Myers-Briggs Type Indicator (MBTI), a well known self-report measure, will be hypothesized. The MBTI was selected because the constructs on which the test was based are similar to those of the PAS. In addition, the instrument is a self-report measure which would enhance the ffficiency of assessment if the MBTI could provide similar kinds of information as a WAIS. As a result of this study we should also learn more about how MBTI types score on tests of ability.

In summary, this study seeks to provide support for the constructs of the PAS as well as obtaining information concerning MBTI type performance on WAIS subtests. More generally, information will be supplied concerning the validity of a system designed to describe and assess the development of normal personality.

The Personality Assessment System (PAS) was developed by John W. Gittinger as a means of describing and assessing the behavior and dynamics of mentally ill patients. It has since developed into a theory of normal personality and a system of personality assessment. Winne and Gittinger (1973) state:

> The Personality Assessment System (PAS) regards personality structure and functioning in terms of highly complex patterns of interaction among a person's primary response style or primitive personality features, the environment in which his development occurs and the long-range compensations and later modifications that he acquires.

It is with this understanding of the complexity of normal personality development that Gittinger has produced both his theory and system of assessment.

The Personality Assessment System identifies three major dimensions of personality:initial endowments and their interactions in the three domains of intellectual, mechanical-procedural and social-interpersonal comprise the primary response state of an individual. An individual is described as an externalizer or an internalizer on the intellectual dimension; regulated or flexible on the mechanical-procedural dimension; and role adoptive or role uniform on the social-interpersonal dimension. While these appear to represent discrete descriptors of behavior they are more accurately viewed as bipolar extremes along the three continua.

The primary endowments establish the general pattern which an individual is predisposed to develop. These endowments limit the individual's ability to select any respond to stimuli. Without the influence of external pressure the individual's awareness and ability to respond would be restricted to this natural, "preferred style." Certain stimuli and responses thus become alien to the individual.

The process of adopting the individual's native abilities with the requirements of the world are described by Schuoman and Thetford (1958).

"As the individual develops, he is confronted with the task of reconciling his primitive personality pattern with various environmental and social demands. These external pressures require him to adapt his inherent needs to the requirements of reality. By acquired alterations in the direction of his primitive personality tendencies, then, the individual is enabled to overcome, in part, the limitations, which his native personality structure imposes on his inherent ability to adjust."

Thus an individual is functioning optimally when she/he has acquired adaptations which increase his/her ability to respond to a variety of externally composed demands.

The PAS postulates two levels of adjustment to the primary level of abilities. The basic level refers to the initial adaptations or compensations to the primary response state. Occuring during childhood and stabilizing around adolescence this level of compensation is long-range and results in relatively stable adaptive tendencies. The surface level refers to the relatively unstable modifications which are attained by an individual later in development, usually stabilizing before adolescence.

The personality of an individual is the result of the interaction of the primary, basic, and surface levels of adjustment. No one level accurately reflects the complexity of the individual's personality dynamics. Any attempt to describe an individual's personality should include the interaction of these levels of adjustment across the three dimensions of personality, they themselves interacting, the results producing sufficient conditions to describe the full range of individual differences.

Intellectual Dimension

The Externalizer and the Internalizer represent the polar extremes on the Intellectual dimension of personality. This dimension is perhaps most easily, if incompletely, described by what the child finds intellectually stimulating. Schucman and Thetford (1958) present the Intellectual dimension in this way:

> This dimension is thought to have direct bearing on both the quality and content of the indificual's mental activity, as well as on the ways in which such activities are utilized. The Externalizer and the Internalizer are the polar extremes of the dimension, and are diametrically opposed to one another in connection with the respective areas of awareness to which they are attuned, and the kind and quality of behavior with which they are predisposed to respond.

Externalizers (E) are stimulated most by contact with the external world. The environment in which E children find themselves provides the primary focus of their attention. They are behaviorally active in responding to the people around them in spontaneous and direct ways. Reliance on perceptions and the use of senses becomes the primary way E children make contact.

As their intellectual satisfaction is derived from external sources, so, too, is their emotional satisfaction, rendering them dependent on their environment for psychological satisfaction. Activities that direct them toward making interpersonal contact are the most satisfying to E children. They are often forced by their environment to respond less, to be more self-sufficient, and more ideationally aware.

Internalizers (I) are focused inward, responding to the internal world of abstract ideas and thoughts. Winne and Gittinger (1973) state:

> External reality becomes meaningful to the Internalizer chiefly through his internal reference points. His spontaneous and direct awareness and reactions center around, and are related to, his own mental processes. His dominant orientation is ideational and the quality of his awareness is inherently nonspecific and abstract. Behaviorally, he is passive since he responds predominantly to covert stimuli which he alone is aware.

As the stimuli for I children are internally derived, so are their emotions expressed. Others may perceive I children as emotionless yet they experience highly personal internally expressed feelings. I children may be described then as self-contained, passive, apparently emotionless children. They prefer to think than to do, resulting in pressure to get them to respond and relate more interpersonally.

Mechanical-Procedural Dimension

Regulated-Flexible are descriptors of the polar extremes on the mechanical-procedural dimension of personality. This domain describes the abilities of individuals in organizing their world. How much stimulation children respond to, the nature of the stimulation, how they organize it and more generally how children attempt to solve tasks of a mechanical or procedural nature characterize the abilities of this domain. The resulting defenses and how they are expressed differ between regulated and flexible individuals.

Regulated individuals react to a limited number of specific, well defined stimuli in whcih they can concentrate and focus. R children are characterized by their ability to concentrate and, as a result, they have a high threshold for confusion and distraction. They can be unbalanced if they are unable to restrict their awareness to a limited number of stimuli. This tendency to restrict awareness effects emotional stimuli as well. As a result, Regulated children appear emotionally insulated and self-

centered. They learn by rote and have little need to understand the theory or the "whole" in order to approach a task. The environmental press on R children is to teach them to be more sensitive to others and to keep them engaged in new learning as they will perseverate.

Flexible children appear to respond simultaneously to a wider variety of stimuli. In a sense, F children are overstimulated, resulting in a low threshold for confusion. Concentration is difficult for them as they are very aware of and distracted by their total environment. As literal as R children can be, seeing the world in terms of black and white, F children are intuitive and imaginative. They see the world in shades of grays and are aware of the subtleties and nuances of situations. Their confusion and ability to see a situation with all its aspects results in their being unsure of the world. F's must understand the reason behind something or the "gestalt" before attempting any task. The environmental press on F children is to restrict their awareness, to concentrate and be less sensitive.

Social Dimension

The Role Adoptive-Uniform dimension (social) is associated with a capacity to adopt initial response styles to the roles required by the cultural milieu in which children are born and raised. The Social dimension has a dual aspect which makes it distinct from the Intellectual and Mechanical-Procedural dimension. Winne and Gittinger (1973) state:

> On the one hand, it is impressionistic, representing the effect of the image of the person projects on observers. On the other hand, it helps to determine behavior, for how one continues to act in social settings is determined to a great extent by the responses one receives.

Role Adoptive children appear magnetic, charming and captivating.

They are people who move easily in a variety of social situations assuming the presence and apparently the value required for acceptance by each group. A individuals are seldom anxious socially, but are capable of exhibiting the required behaviors of the group they find themselves. In this way they appear very conforming and conventional, whether they are in fact or not.

A children can be victims of their own appeal. Others tend to project qualities onto them which they may not have. As a result, they may fail to meet the expectations of others and be punished. The environment A children grow up in, to a large part, determines whether they will use their appeal to enhance their relationships, exploit them, or to avoid them all together.

Role Uniform (U) individuals apply their limited repertoire of roles to whatever situations they encounter. They do this whether the roles are appropriate or not. A individuals experience social anxiety when they find themselves in a social situation in which their role is inappropriate. As a result they have considerable experience with initial rejection, unlike As. In order to spare themselves rejection they tend to limit the range of their social encounters. Often U individuals may find compensatory skills to overcome social inadequacy as a means of being accepted. The environmental press for U individuals is to be more socially versatile, while As are pressed to integrate their social adoptability with other dimensions of their personality.

The descriptions of the three domains of personality represent over-simplifications. They in no way attempt to describe the interaction of variables which is the essence of the PAS. It is with the acknowledgment of this fact that the processes of compensation and modification of these

individual domains is presented.

Compensation

As a result of interaction with the environment a process of compensation of the initial or primary style can occur. Compensation represents the individual's first responses to the pressure of the environment to change in some way from his/her initial personality style. This is accomplished by acquiring or learning uses of abilities which are not part of the original personality structure. They are an individual's attempt to adapt to a variety of situations, thus increasing personal effectiveness.

Parents, and later other social influences may accept or reject, in varying amounts, a child's natural abilities. Should the parents apply significant amounts of pressure to move the child in a direction away from his natural abilities, compensation is likely to occur. It should be noted that each dimension of personality is viewed as a continuum and as such, individuals have varying amounts of the abilities that comprise the dimension. The strength of the original tendency in conjunction with the amount of external pressure applied determine the amount and nature of the compensation that will occur.

The price of flexibility in responding to various situations that may result from compensation is psychological tension. Individuals move away from the person they are "naturally", as a result of compensation. In essence, they are forced to repress or suppress parts of themselves with tension resulting. The magnitude of the tension is the result of the strength of the original tendency and the amount of compensation.

Modification

The basic personality structure stabilizes before adolescence and then

is itself subject to change through a process called modification. The interaction of the basic personality and modification result in a surface level of personality. This third level of adjustment is less stable than the previous two, and is more likely to break down when stress is applied. It is rare that an individual's basic level would give way to stress sufficiently to reveal the primitive level of personality. This would be considered profound regression should this occur.

Modification does not directly influence the primitive level of personality but it does influence the work of compensation. Four general adaptations to the primitive personality can result from compensation and modification. If the effect of the original compensation is to move the individual away from their primitive level and if modification contributes further to that process then repression of the primitive level results. Should there be little or no compensation or modification of the primitive level, then the individual fails to acquire an orientation sufficiently well-rounded to permit appropriate and flexible responses to the environmene. The two other responses to the primitive level are results of the remaining combinations of compensation and modification.

The result of compensation and modification of the primitive level of personality is to produce a three-level, three-dimensional description of personality. The interaction of these variables results in more than five hundred permutuations of PAS profiles. Add to this the effect of the Activity Level and the Normal Level and one can see how the PAS accounts for individual differences in the personality of humans.

Activity Level

The Activity Level effects the three personality dimensions and levels of adjustment. The impact of the Activity Level is felt in two ways. Winne

and Gittinger (1973) state:

> First it represents an estimate of the extent to which an individual is aware of, in contact with, and motivated toward interaction with his environment. Second it indicates the consistency with which a person can maintain his/her surface adjustment.

A high Activity Level results in the individual being able to maintain his/her surface level adjustments unless placed under large amounts of stress. Low Activity Level reflects a relative inability to maintain surface adjustments. This description is an oversimplification of the role of Activity Level and does not attempt to explain how the individual will try to maintain their surface adjustment.

Normal Level

The last identified factor influencing the personality of the individual is the Normal Level. Saunders (1967) states:

> Normal Level is an estimate of the standard score level an individual would receive on all subtest scores if all personality influences were eliminated from his or her performance. It also represents a rough estimate of intellectual potential as it is the point at which an individual can be expected to perform at normal efficiency and energy.

As Normal Level is considered an inherent capacity subject to little change, it sets the parameters for the individual's potential for overall effectiveness.

The preceding description of the PAS represents an attempt to distill the basic psychological assumptions of the PAS theory. The following section will attempt to explain the psychometric assumptions of the PAS and it's use of the Wechsler Adult Intelligence Scale. As a whole the PAS should then be understood as both a theory of personality development and a system for assessing that development.

The PAS Symbol System, a shorthand to denote primitive levels and the resulting compensations and modifications are noted in Table 1.

Table 6

PAS Symbol System

Definition	Extended Notation	Brief Notation Primitive	Basic	Surface
Externalized-Internalized Dimension				
Uncompensated, Unmodified	Euu	E	e	e
	Iuu	I	i	i
Uncompensated, Modified	Euc	E	e	i
	Iuc	I	i	e
Compensated, Unmodified	Ecu	E	i*	$e^{o}a$
	Icu	I	e*	$i^{o}a$
Compensated, Modified	Ecc	E	i*	$\underline{i}$ b
	Icc	I	e*	$\underline{e}$ b
Regulated-Flexible Dimension				
Uncompensated, Unmodified	Ruc	R	r	r
	Fuu	F	f	f
Uncompensated, Modified	Ruu	R	r	f'
	Fuc	F	f	r'
Compensated, Unmodified	Rcc	R	f*	$r^{o}a$
	Fcu	F	r*	$f^{o}a$
Compensated, Modified	Rcu	R	f*	$\underline{F}$ b
	Fcc	F	r*	$\underline{r}$ b

		Role	Adaptive-Role Dimension	
Uncompensated, Unmodified	Auu	A	a	a
	Uuu	U	u	u
Uncompensated, Modified	Auc	A	a	u'
	Uuc	U	u	a'
Compensated, Unmodified	Acu	A	u*	u[b]
	Ucu	U	a*	a[b]
Compensated, Modified	Acc	A	u*	A°a
	Ucc	U	a*	u°a

Note: As indivated in the text, any of these symbols may be followed by a plus sign to indicate a pronounced tendency in the indicated direction.

[a]Notation of the form x. or x_o are acceptable alternatives as requited by computer character sets.

[b]Notation of the form x/ is an acceptable alternative as required by computer character sets.

Use of the WAIS in the Personality Assessment System

The PAS originally utilized the Wechsler Bellevue Intelligence Scale Form I (Wechsler, 1944) to derive personality profiles. While the Wechsler-Bellevue Intelligence Scale Form II is not considered sufficiently comparable to allow its use for the PAS, the Wechsler Adult Intelligence Scale (Wechsler, 1955, 1958) has been used effectively to derive PAS results. There is some evidence (Saunders, 1961) that the Wechsler Intelligence Scale for Children (WISC) is appropriate for the derivation of children's profiles.

The major psychological premise of the PAS is that individuals have areas of relative strengths and weaknesses and that individual behavior

represents an attempt on the part of the person to minimize the significance of their weaknesses. This is often accomplished by exploiting strengths. Winne and Gittinger (1973) state:

> The WAIS is assumed to measure the pattern of behaviors that reflect the individual's strengths and weaknesses and thus one can infer personality from an intelligence test (WAIS) . . .
>
> The psychometric premise underlying the Personality Assessment System is that the Wechsler patterns provide valued information that can be employed to spell out the specific behaviors mentioned above. The psychometric premise, combined with the psychological premise, leads to confusion that the Wechsler battery is, then, not only a source of varied patterns of intellectual functioning, but also a valid personality measure.

Separating abilities, as measured by the Wechsler, into aptitudes and achievements, the primitive personality type and the resulting adjustments can be derived. The distribution of the difference scores between Wechsler subtest scores which measure aptitudes (primitive abilities) and the intra-individual average (Normal Level) should, theoretically be normally distributed and have normal kurtosis. Distribution of difference scores between Wechsler subtest scores measuring achievement (adjustments) and the Normal Level should result in excess kurtosis and skewing. Saunders and Gittinger (1965) have reported results supporting the Normal Distribution of the Digit Span (I/E), Block Design (R/F), and Picture Arrangement (A/U) subtests. The distribution of difference scores of the remaining subtests have not demonstrated the same skewing and kurtosis characteristic of the primitive subtests.

Theoretically, the Normal Level represents an intra-individual average of subtests. It is from this score that one can assess whether a subtest score reflects a strength for an individual or a weakness. The Normal Level serves as a bridge between the use of the Wechsler scales as a means

of assessing personality. It also represents a unique contribution of the PAS elevating the system above other subtest scatter systems and the problems inherent with them (Cohen, 1957; Dennerill, Broeder, and Sokolav, 1964; Guertin, Wilson, Rabin, Frank and Ladd, 1966; Shaw, 1967; Saunders, 1959, 1960 a, 1960 b, 1962).

Operationally Normal Level has been difficult to define. Many attempts have been made to produce a valid means of deriving Normal Level resulting in only adequate operational definitions. To date none are considered sufficient definitions and so for the purposes of this study the Normal Level formula used in the original ETS study will be used (See appendix).

WAIS Subtests

The three dimensions of personality and the corresponding levels of adjustment are derived from WAIS subtests. Allison, Blatt, and Ainet (1967), Tapaport, et al. (1945) and others have suggested interpretive rationales for what they assume each subtest measures. Rabin (1981) suggests that these rationales are based on extensive clinical experience. Rationales for the use of subtests and what they measure in the Personality Assessment System were based primarily on the clinical experience of John Gittinger. The vocabulary subtest is not used in the PAS as it is considered too culture-bound to produce results useful cross-culturally.

Intellectual Dimension (I-E)

Primitive, Digit Span, Basic, Arithmetic, Surface, Information.

The scores individuals receive on the Digit Span subtest, relative to their Normal Level represents their position on the Internalizer-Externalizer continuum. This is considered a primitive ability and as such is presumed to be normally distributed in the general population. The task

measures an individual's ability to deal with abstractions (in this case numbers) and to limit stimuli from the external environment. This task is a "natural" for Internalizer as they can both deal with the abstractions required to be successful as well as to ignore external distractions (examiner).

It is for the same reasons the Digit Span is a natural for Internalizers that the task is difficult for Externalizers. Externalizers are more likely to be distracted by the examiner (external stimulus), thus resulting in a lower Digit Span score relative to their Normal Level. Their tendency to be concrete also proves a disadvantage when confronted with a task involving the use of abstractions.

The basic level of the I-E dimension is indicated by the Arithmetic subtest score. Both Is and Es must score well on the Arithmetic subtest to demonstrate compensation. This subtest is assumed to measure ability in symbolic reasoning and is also considered an externally imposed task and as such requires Is to "make contact" with the external world. A high score by an I reflects an attempt to discipline the ability to deal simultaneously with abstractions and the environment. Is who do not do well have failed to discipline their primitive ability to deal with abstractions sufficiently to apply them to practical tasks. Arithmetic is a task in which Es are naturally inferior unless they have improved their inability to work with abstractions. Thus high scores on the Arithmetic subtest represent compensation for both Is and Es.

The Surface Level of the I-E dimension is determined by the Information subtest score. A measure of cognitive ability and verbal memory, this task measures the amount of modification an E or an I individual has made. The subtest requires both externally and internally oriented

skills. Essentially the subtest requires the storing of idean (information) that is acquired from paying attention to the environment. Is should do well on this ideationally oriented test if they become aware enough of the external events which the information subtest measures. Es who have modified their primitive tendency will do well as a result of acquiring the internalized abilities (storing information) of the task.

Mechanical-Procedural Dimension (R-F)

Primitive, Block Design; Basic, Similarities; Surface, Comprehension.

The primitive level on the mechanical-procedural dimension is indicated by the score received on the Block Design subtest. The abilities required to perform well on the Block Design are characteristic of the Regulated (R) individual. The R assumes there is one answer to the problem, ignoring distractions in the attempt to solve the problem deliberately and systematically. The R's perseverating style results in success in the task. The Flexible (F) individual is too easily distracted and finds concentration on this detailed task difficult. His/her need to "see the whole" gets in the way as it delays him/her in noticing the details that allow successful completion. As a result, the F may complete the design but will not receive the maximum number of points due to his/her lack of speed.

The basic level of the Regulated-Flexible dimension is indicated by achievement on the Similarities subtest. A high score on this subtest reflects compensation of the qualities that makes an individual an R. The Similarities subtest involves the ability to perceive abstract relationships. Rs are unable to perform this skill naturally so they must compensate their tendency to be concrete. Fs should perform well on this task "naturally." Compensation for the F means denial of their ability to see relationships and results in a low score.

The Comprehension subtest indicates the extent of the modification that has taken place on the R-F dimension. This test measures cultural conventionality and as such taps into the R's ability to learn by rote and to be conforming. If an R has modified these tendencies then she/he will score low on the comprehension subtest. The F does not learn by rote and so modification of their style of learning will mean acquiring this ability. High scores on comprehension reflect modification for the F.

Social Dimension (A-U)

Primitive, Picture Arrangement; Basic, Picture Completion; Surfact, Object Assembly.

The Picture Arrangement subtest is regarded as the indicator of a person's primitive abilities with regard to the Role Adoptive-Role Uniform dimension. The Picture Arrangement subtest measures an individual's insight into social situations and ability to utilize social cues. The A's natural ability in social perception and dealing with novel social situations results in a high subtest score. U individuals are relatively socially inept and are "thrown" by the novelty of the situation. They are also unable to empathize with and predict behavior of the characters in the Picture Arrangement cards.

The ability to recognize and respond to the objects and more subtle cues of one's external social environment is measured by the Picture Completion subtest. A individuals compensate their ability to understand the "real world" by denying this ability, scoring poorly on the subtest. U's compensate their ability by developing skills that require contact with the external social world and will score high.

The Object Assembly subtest indicates the presence or absence of modifying tendencies in the A-U dimension. How comfortable an individual is with his/her basic level of adjustment is reflected in the surface level score. A high score reflects an individual who is comfortable with his/her basic level adjustment. Free of anxiety concerning that adjustment, they will score well on Object Assembly. Individuals who are uncomfortable with their adjustment will be anxious, resulting in a lower score.

PAS Research

The Personality Assessment System has not generated, to date, the wealth of research one would expect from a personality theory. The original PAS publications were intended primarily to present the theory of John Gittinger and the system itself. Krauskopf (1981) has made the most recent attempt at presenting the foundations of the theory. Amolsch and Henrichs (1975), have noted that published research on the PAS consists mainly of masters theses, doctoral dissertations, and privately published papers. Perhaps two of the most salient reasons for the relative draught of PAS research is the complexity of the system and its' association with subtest scatter analysis.

Amolsch and Henrichs (1975) note that many investigators argue that it is impossible to evaluate personality from performance on the WAIS. Guertin, et al. (1966) list a number of variables working against attempts to identify a personality characteristic in a person by using WAIS subtests. Historically the most damaging argument against using the WAIS comes from those (Cohen, 1957; Dennerill, et al., 1964; Shaw, 1967) who argue that there are only three to five factors in the WAIS structure.

Saunders (Saunders, 1959; 1960a, 1960b, 1962; Klinger and Saunders, 1975) have conducted systematic research which has challenged the suggestion of the limited number of factors in the WAIS structure. Arguing that the research designs of the original research were inappropriate (Saunders, 1959) he has demonstrated through the use of item analyses and subtest analyses of the Wechsler that there are between seventeen and twenty factors in the WAIS structure (Saunders, 1960a, 1960b, 1962).

Jones (1956) and McNemar (1957) have also questioned the validity of subtest scatter analysis. They argued that the reliability of differences between any two subtests is sufficiently low and the standard error of difference between any two subtests as sufficiently large as to make comparisons between subtests meaningless. It is on this point that the PAS use of the WAIS differs from other scatter analyses of subtest scores. The PAS uses a comparison of subtest scores to the Normal Level not to each other. As stated previously, Normal Level represents an individual's overall ability and is comparable to a general intelligence score.

Saunders (1967) argues that the reliability of the Normal Level is higher than any subtest score and is comparable to the reliability of the total score. Reliability of difference scores from the Normal Level is sufficiently high as to warrant the use of comparisons. Thus, the most systematic PAS related research has focused on the validity of the WAIS as an instrument of the PAS.

Sex differences on subtest scores were reported by Saunders (1981) after examining 5710 WAIS profiles (3,019 male and 2,691 female). Significant sex differences were reported on all ten WAIS subtests used in PAS, but that 84 to 90 percent of those differences were attributed to

subtests relating to the PAS basic level. Saunders suggests that the finding supports the view that sex differences in personality are not innate, but are products of early life experience.

Tests of PAS Constructs

A limited number of studies have tested the basic constructs of the PAS. Wagner (1967) attempted to relate the PAS constructs of Internalizer-Externalizer with the classical concepts of Introversion-Extroversion (Carrigan, 1960). Four factors, two apparently related to Introversion and two with Extroversion emerged from the factoring of the intercorrelation of thirteen variables. These variables were derived from objective personality questionnaire measures of introversion and extroversion, Digit Span and Arithmetic subtests--related to internalization and externalization as defined by the PAS--and a specially designed I-E questionnaire. Three of the four factors which emerged appeared related to the primitive, basic, and surface PAS levels within the I-E dimension. Wagner concluded that while these results support the hypothesis of overlap between Introversion-Extroversion and Internalizer-Externalizer, these concepts are not equivalent.

Turner, Willerman, and Horn (1976) stated that the primary purpose of their study was to determine the correspondence between the theoretical personality characteristics of persons within various PAS classifications as measured by standard personality inventories. They hypothesized that subjects with comparable PAS profiels (7 primitive types were used) should have similar profiles on the 16-PF (Cattell) and the Minnesota Multiphasic Personality Inventory and that PAS Externalizers should score higher than Internalizers on the Sociability, Enthusiasm and Conscientiousness scales of the 16-PF and the MA scale of the MMPI. Other hypotheses of

the Turner el al. study included (1) persons compensated on all three personality dimensions should score higher on Cattell's tension scale and Guilt Proneness or Insecurity scale of the 16 PF, (2) persons having a high Activity Level as determined by the PAS should score higher on the M.A. scale of the MMPI and the Sociability, Surgency or Enthursiasm and Ego Strength or Conscientiousness scales of the 16 PF or the M.A. scale of the MMPI. Subjects were 215 adults, 105 males and 110 females for whom WAIS, 16 PF and MMPI scores were available. The data on the adults was collected as part of a screening process for potential adoptive parents. These subjects were described as "solidly within the middle class" lending support to the study as one of the normal personalities.

The authors reported that virtually all predictions of correlations between the PAS and the MMPI and 16PF were unsupported. Different basic and surface level groups did not differ on any MMPI or 16PF scales. Only limited support for two hypotheses; Activity Level for men hypothesis, and the relationship between the primitive R-F dimension and other personality measures, hypotheses were found. Results significantly opposite to the compensation-tension hypothesis of the PAS were reported.

Saunders, (1982) in responding to the Turner et al. (1976) article suggests that the study represents an oversimplification of the system resulting in the use of inappropriate hypotheses, dependent measures, design and analysis of results. The assumption that the subjects were-in-fact "typical" was questioned by Saunders as well.

Saunders further suggests that given the relative stability of WAIS scores and the relative liability of MMPI scores comparison of the two is inappropriate. He states that a more plausible hypothesis would be that

different PAS types yield different variance-covariance matrices of MMPI scores. Saunders does suggest that the global hypotheses the authors generated from the 16PF do appear appropriate, but the analysis of results appears faulty. In general, the Saunders article refutes the arguments critical of the validity of the PAS from the Turner, et al. article. Saunders also makes suggestions regarding the appropriate use of the PAS for research purposes.

Winne and Gittinger (1973) report research related to the Regulated-Flexible dimension of the PAS conducted by Thetford and Schuman. Focusing on compensation and repression on the R-F dimension, they generated hypotheses corresponding to the basic personality types within the R-F dimension - R_u, R_c, F_u, and F_c. Subjects, 152 white males, were administered the WAIS and asked to select a description which they believed to be most like themselves. These descriptions were of the four basic personality types of the R-F dimension. Five of the nine hypotheses generated proved to be significant at the .05 level. Those hypotheses were:

(1) F_u's picked the F_u description as most like them. R_u's picked the R_u description as most like them.

(2) F_u's and R_u's preferred the descriptions of their own type.

(3) F_u's least preferred the description of R_u's while R_u's least preferred the description of F_u's.

(4) R_c's preferred descriptions of R_c's.

(5) F_c's preferred descriptions of F_c's.

Frank (1969) hypothesized that Field Independent people on the Witkins Field Dependence-Independence scale would be primitive level Internalizers and Regulators, whereas Field Dependent subjects would be primitive level Externalizers and Flexibles. Testing 79 undergraduates, Frank reported that

Field Independent people tended to be Externalizers and Regulators while Field Dependent subjects were Internalizers and Flexibles. His hypotheses were not supported. Johnson (1970) in a similar study controlled for factors believed to influence Frank's results and reported evidence supporting the original hypotheses.

PAS Hypotheses

Several approaches have been taken in an effort to validate hypotheses generated from the PAS. York (1963) reported the results of one study in which he attempted to place profiles given to him in one of three groups; actors, psychiatric residents, and psychological technicians. Predicting from theory that actors and residents would be basic level efa's and technicians basic level iru's, York was correct in placing fifteen out of eighteen individuals in their correct occupations.

Willis (1969) tested three groups of mathematics majors and instructors for the similarity of their PAS profiles. In the original study he compared the profiles of eight National Science Foundation students and their instructor. Seven of the nine were primitive R basic f*, all nine were compensated in the I-E dimension, seven were primitive u, six were basic a or a*, and seven were surface a. Willis went on to examine the PAS formulations of the combined sample of five mathematics majors and nine graduate students. Twelve of the fourteen were compensated in the I-E dimension and all were modified, twelve were primitive R, 9 of whom were basic f*. The results lend support to the consistency of PAS profiles of homogeneous groups.

Tetrault (1973) performed a similar study using twenty AWOL soldiers. Nine of the twenty were primitive IRA's, nearly twice the number one could expect to find in a random selection from the population-at-large. Soltz

(1970) hypothesized that certain PAS patterns should be more numerous in a female prison population than in the general population. His hypotheses were not supported. He explained his nonsignificant results by suggesting the hypotheses were generated from patterns of male felons and did not account for sex differences.

Martin and Saunders (1969) studied WAIS profiles of two hundred and twenty-one women in seven professional groups: attorneys, physicians, pharmacists, realtors, social workers, high school science teachers and a combined group of mathematicians-physicists-computer programmers. They report finding stable reference groups based on PAS profiles. Bem (1982) describes the reference group as a method of cross validating findings with archival data and states that it has produced the strongest evidence in favor of the PAS. The Martin and Saunders study identified three groups from the realtors, two from the social workers, and three groups from the remaining five professions.

Goodnow (1961) tested the hypotheses that schizophrenics would be predominantly IRU personality patterns. Utilizing the Wechsler-Bellevue-G, an adaptation of the Wechsler used with foreign groups, Goodnow tested twenty hospitalized schizophrenics, thirty workers, and thirty students, all Chinese in nationality. All of the Chinese schizophrenics were I, 95% were R and 75% were U. The student and worker groups more closely resembled a normal distribution of PAS profiles. Goodnow notes that Wechsler suggested that a typical pattern for schizophrenics was a Digit Span score equal to a greater than the subject's mean for all subtests (PAS I individual), equal to or greater than the mean on Block Design (PAS R individual) and equal to or lower score on Picture Arrangement (PAS U individual).

Thetford and Schuman (1968, 1970) have tested hypotheses concerning

specific symptomatology in clinical groups. Testing diagnosed conversion hysterics, they found that sensory-motor symptoms predominate in primitive Externalizers and were absent in primitive Internalizers. Internalizers of this group with low Picture Completion suffered from headaches, while this internalized symptom did not occur in both low Picture Completion Externalizers and for all high Picture Completion S's.

Davis (1956) has produced other support for the sensory motor hypothesis. Six out of seventeen E_u subjects drawn from the case folders of female clients at the University of Colorado Counseling Center had notations of severe menstrual problems. These notations rarely appeared in other randomly selected folders.

Predictions of performance based on PAS profiles have been conducted in a number of studies. Cartwright (1969) demonstrated that the PAS may be used as a predictor of risk-taking behavior. The Torrance and Zeller Life Experience Inventory (TZ) was administered to ninety-three general psychology students and thirty-one high, thirty-one medium, and thirty-one low scorers were selected as the experimental groups. All subjects performed three risk taking tasks and made a final bet prior to taking the WAIS. In the original analysis, the TZ was found to be a slightly better predictor than the PAS, however, in a post hoc analysis in which revised PAS derived hypotheses were adopted the results shifted in favor of the PAS.

Krauskopf and Bielefield (1968) used the PAS to predict achievement in a senior course in psychological testing. Ability scores (WAIS IQ) had no predictive value while PAS patterns consistent with the requirements of the course predicted grades significantly. In a learning study Eldred (1968) reported the results of predicting success in programmed instruction

of disturbed children using the Wechsler scores of the subjects. Gittinger correctly predicted 13 out of 15 cases while Eldred predicted 5 out of 6. Generally those successful in the program were basic iru's.

Bielefield (1968) examined the relationship between PAS variables and concept attainment. His sample consisted of 52 male and 44 female students in an introductory psychology class. Three concept attainment tasks, each at a different level of difficulty, were used as short-term criterion variables and final course grades as a long-term criterion. Bielefield predicted that the R-F and I-E dimensions would add to the use of the Normal Level in making predictions. Normal Level alone proved to be the best predictor for the moderately and most difficult tasks. Some personality differences were reported on the easiest tasks and sex differences were also reported as well. The A-U dimension provided the most useful predictions with U_{uu} subjects the best at the task and U_{cc} generally poorest. Bielefield suggested, however, that the anxiety reflected in test performance and behavior seemed to be the most significant variable operating.

In one of the most recent studies Rodd, Townsend, and Hoelscher (1980) analyzed similarities in the profiles of subjects classified as alcoholics. Subjects were 341 males and 82 female alcoholics whose profiles were acquired through veterans hospitals, community mental health centers, private practice, and church counseling centers. The authors suggest that F individuals are more likely to become alcoholic based on their data. They also conclude that the treatment offered by Alcoholics Anonymous is best directed at the R individual. The structured realistic approach of A.A. lends itself to the learning style of the R who learns best by rote and perseveration.

Saunders, Kaplan, and Rodd (1980) report an innovative pilot program which uses PAS profiles in marriage counseling. Husband's scores, wife's scores, and therapeutic outcome were used to classify the couples into contingency tables. A low husband score on Information and a high wife score on Information is relatively rare suggesting "assortative mating." A low husband score on Comprehension and high wife score on Comprehension is similarly rare, but the effect usually operates later, via a poor counseling prognosis. Other such results were reported and through preliminary they do suggest a need to continue collecting data and experimenting with the PAS for its use in marriage counseling.

JUNG: PSYCHOLOGICAL TYPES

Carl Jung's constributions to the field of psychology are well known. In addition to his original ideas concerning the collective unconscious and his challenge to Freud's theoty of the sexual nature of the libido, Jung postulated the idea of psychological types. The publication of Psychological Types, in 1921 represented a refinement of earlier papers he had presented on the topic. Later in his life he described his motivation in writing the book this way:

> Psychological types, first published in 1921 . . . sprang originally from my need to define the ways in which my outlook differed from Freud's and Adler's. In attempting to answer this question, I came upon the problem ot fypes; for it is one's psychological type which from the outset determines and limits a person's judgment . . . my book therefore, was an effort to deal with the relationship of the individual to the world, to people and things. It discussed the various aspects of consciousness, the various attitudes the conscious mind might take toward the world . . . . The book on types yielded the insight that every judgment made by an individual is conditioned by his personality type and that every point of view is necessarily relative.

In these few sentences Jung presents the essence of his psychological typology, a part of his own personality theory that helped distinguish his work from the work of Freud and Adler. His observations on how individuals orient themselves to the world in differentiated and consistent ways led to his efforts to describe human behavior as resulting from personality types.

Jung believed that there are two major dimensions of personality, the conscious and the unconscious, that contribute to type. Consciousness is described as the individual's awareness of internal and external events, thoughts, and feelings and the attitudes or perspectives from which the individual views or interacts with the world. The conscious mind provides the individual with the ability to react and adapt to the environment (Jung, 1969). The unconscious, consisting of the personal and collective unconscious remains inaccessible to the individual. It serves as both a repository of repressed personal memory and the transmitter of the collective images of mankind. Together the conscious and unconscious provide both direct and indirect means by which the type of the individual is expressed.

An individual's consciousness may take one of two forms, introversion or extraversion. Each form represents a habitual reaction of the psychic process to the world. Jund (1921, p.13) states:

> But the complicated external conditions under which we live, as well as the presumably even more comples conditions of our individual psychic disposition, seldom permit a completely undisturbed flow of our psychic activity. Outer circumstances and inner disposition frequently favour the one mechanism, and restrict or hinder the other; whereby a predominance of one mechanism naturally arises. If this condition becomes in any way chronic, a "type" is produced, namely an habitual attitude, in which one mechanism permanently dominates, not, of course, that the other can even be completely suppressed, inasmuch as it also is integral factor in psychic activity.

Jung thus describes the habitual nature of the dominant process as well as the relative suppression of the contrary process.

Extraversion describes the habitual direction of conscious psychic activity to objective stimuli. Extraverts direct their attention in an objective way to the elements of their environment; people, events and

experiences. While subjective values may be associated with these stimuli the subjective nature of the events play a less significant role for the extravert (Jung, 1971). The objective nature of the individual's relationship with the world characterizes this type.

Behaviorally extraverts are described as outgoing, accommodating, and action oriented. They are viewed as adapting easily to changing situations and are characterized as willing to take risks and exhibit confidence while doing so.

Introverts focus on the subjective nature of their perceptions of objective reality. Unlike the extravert, subjective perceptions are the determinants of the introvert's behavior. Jung (1971, p.5) states,

> sometimes the object represents no more than an outward token of a subjective content, the embodiment of an idea, the idea being the essential thing.

While extraverts focus on objective relationships with the world, introverts focus mainly on subjective perceptions. Introverts are described as being withdrawn socially often engaging in thought. They might be characterized as hesitant and reserved.

In summary, the psychic energy of extraverts is constantly being diverted outward toward objects in the environment. Their preoccupation and habitual response is that of objective reality. Introverts direct their energy to their own subjective impressions of the world; the subjective ideas that are generated from objects are more important.

Jung (1921) attributes the origin of extraversion and introversion to a biological means of adaption. Jung notes that organisms perpetuate their species either by propogating themselves in large numbers with few defenses to protect the individual or providing individual organisms with sufficient defenses but a low fertility rate. June (1971) states,

> . . . that the peculiar nature of the extravert constantly urges him to expend and propogate himself in every way, while the tendency of the introvert is to defend himself against all demands from outside to conserve his energy by withdrawing it from objects thereby consolidating his own position.

Change from one orientation to the world to the other within the individual was considered highly unusual by Jung. This would likely occur only when a mother with an "abnormal" attitude exerted sufficient pressure on a child to change. This change would result in the development of a neurosis with the only cure being the acceptance of the original attitude by the individual.

In addition to extroversion and introversion, which are considered the two basic attitudes, Jung postulated four basic functions; intuition, sensing, thinking and feeling. These four functions represent pairs of polar extremes on two continuia. Intuition and sensing are considered opposite ways of perceiving, while thinking and feeling are opposite ways of judging. Whereas the basic attitudes reflect a way of orienting consciousness to the world the functions are regarded as a system for relating various facts and data the individual collects from the environment (June, 1968).

Sensing reflects the use of sense organs by the individual to perceive externally or internally derived stimuli. An individual who uses sensing as their dominant function often is tied to the immediacy of a situation with little imagination to speculate about the future or perceive possibilities (Jung, et al., 1964b).

Intuition is the polar opposite of sensing on the perception continuum. It reflects the use of unconscious perception of subliminal stimuli (Jung, 1971). Unlike sensing there is no obvious or direct re-

lationship between the stimuli and the resulting impressions. Whereas sensing focuses on perceptions of the present, intuition often is directed toward future possibilities or past occurrences. Intuition allows for the awareness of relationships which could not be identified by any of the other three functions (Jung, 1969).

Thinking was described by June (1971) as the process of connecting two or more images or percepts by means of a concept. Thinking is a means of coming to a conclusion and as such represents one type of judgment. Judgments are made by thinking types through a logical, analytical evaluation of the facts.

Feeling is a form of judgment based on the subjective values of the person. The individual evaluates experiences in terms of good or bad, pleasant or unpleasant. Feeling was considered by Jung (1964a) to be a rational way of assigning a value to an experience.

Each of the four functions are present within each individual, but typically one dominates. This occurs when a function becomes more highly differentiated through habitual use. This dominant or superior function comes under conscious control while the other three functions remain generally underdeveloped at the unconscious level. Jung (1921, p.514) states,

> The products of all functions can be conscious, but we speak of the consciousness of a function only when not only its' application is at the disposal of the will, but when at the same time its' principle is decisive for the orientation of consciousness.

The polar opposite of the superior function is considered to be the most repressed function and the least developed. Known as the inferior function it is associated with the more archiac or primitive aspect of personality (Jung, 1968).

A second function known as the auxiliary function influences the personality of the individual as well. It serves to influence the dominant function but is considered much less effective in its impact. June (1921, p.515) states,

> Hence the auxiliary function is possible and useful only insofar as it 'serves' the leading function, without making any claim to the autonomy of its own principle . . . . Naturally only those functions can appear as auxiliary whose nature is not opposed to the leading function.

Jung viewed the personality type of the individual as resulting from the interaction of their own orientation to the world (extraversion/introversion) and their own superior, inferior, and auxiliary functions. While an individual may use any of the functions and eith orientation, it is the habitual nature of their use that determines the "type" of the individual; Jung postulated only two different types of functions, judgment and perception. In the following section, the Myers-Briggs Type Indicator (MBTI) and its' use of a third function will be presented.

MYERS-BRIGGS TYPE INDICATOR

The Myers-Briggs Type Indicator is a 166 item forced choice inventory which was developed to assess personality type as described by Jung. In addition to providing scores for the attitudes of introversion-extraversion, the functions of thinking, feeling, sensing and intuition, two additional categories not part of Jung's original typology, judging, and perceiving are included. The most widely used version of the Indicator (Form F) was published in 1962 and has been used in over 400 research studies. The current version of the Indicator (Form F) was published in 1976 and differs only slightly in its instruction.

Myers (1962, p.2) describes the intent of the Indicator in this way,

> The main purpose of the Indicator is to ascertain a person's basic preferences. EI, SN, TF, and JP are therefore indices designed to point one way or the other, rather than scales designed to measure traits. What each is intended to reflect is a habitual choice between opposites, analogous to right-or-left-handedness. Thus EI means E or I, rather than E to I.

Thus the dichotomous nature of the typology is appropriately reflected in the Indicator.

The items which comprise the Indicator seek to measure typological differences by the use of behavior reports, value judgments and word pairs. Each scored item has one answer weighted in favor of the opposing preference. Points for each preference are totaled yielding eight scores. These eight scores are interpreted as four pairs of scores, with the larger of each pair indicating the preferred pole. The result is a dichotomous classifi-

cation on each of the four continua. Sixteen possible type classifications are thus generated. Four continuous scores are calculated for each person, one score for each scale (Myers, 1962). Continuous scores reflect the strength of the preference a person has on each of the four continua. Frequency distributions of continuous and dichotomous scores vary depending on the index and the sample.

Reliability of the MBTI

Various articles have reported attempts to determine the reliability of the Indicator. Carlyn (1977) reports that two aspects of reliability have been examined: measures of internal consistency and stability. Internal consistency of Type-Category scores calculated by using Phi coefficients are generally reported as ranging from .55 to .65 (E-I), .64 to .73 (S-N), .43 to .75 (T-F) and .58 to .84 (J-P). Tetrachoric coefficients have been reported ranging from .70 to .81 (E-I), .82 to .92 (S-N), .66 to .90 (T-F), and .76 to .84 (J-P). Myers applied the Spearman-Brown prophecy formula to tetrachoric correlations to estimate split-half reliabilities. This method has resulted in reliability estimates generally regarded as too high as the reported frequency distributions are not generally normally distributed, a necessary assumption for the use of the statistical procedure (Nunnally, 1967). Carlyn (1977) states,

> Estimated reliabilities of type categories, appear to be satisfactory in most cases, although there is a rather wide range between conservative and liberal estimates of internal consistency.

Validity of the MBTI

The construction of the MBTI is described by Myers in the 1962 manual. Beginning with a pool of items based on type theory and observations, internal consistency analyses were conducted. Items surviving the original and later analyses comprise the Indicator. This procedure while lending

support to the content validity of the instrument is not conclusive. Stricker and Ross (1963, 1964a), in two separate studies report only limited support for the S-N and T-F scales. They further suggest that the J-P and E-I scales may be measuring other than the dimensions described in the MBTI manual. Carlyn (1977) states that while the question of the content validity of the Indicator is not settled, inspection of the scored items of the E-I, S-N, and T-F scales are generally consistent with the content of Jung's typological theory.

Bradway (1964) reports the scores of 28 Jungian analysts on the MBTI and the Gray-Wheelwright Questionnaire (Gray and Wheelwright, 1964) another measure of Jungian typology. Agreement between both measures was reported as .96% on the E-I dimension, 75% on the S-N dimension, 72% on the T-F dimension, and 54% agreement between the tests on all three dimensions derived from Jung's original typology. The analysts also self-typed themselves and reported 100% agreement with the MBTI on the E-I dimension, 68% on the S-N dimension, 61% on the T-F dimension and 43% agreement between self-typing and the MBTI, on all three dimensions. These results are considered additional support for the content validity of the MBTI.

Stricker and Ross (1964b) also compared scores received on the Myers-Briggs Type Indicator and the Gray-Wheelwright.

Coefficients ranging from .76 to .82 (E-I), .75 to .87 (S-N), .69 to .89 (T-F), and .80 to .84 (J-P) have been reported for the continuous scores (Webb, 1953, Myers, 1962). These estimates are higher than dichotomous scores. Some information is lost changing from continuous to dichotomous scores resulting in lower reliabilities for the dichotomous scores. As a result of the variability reported in reliability scores it is recommended that internal-consistency reliabilities be computed for particular sample scores (Carlyn, 1977).

Levy, Murphy, and Carlson (1972), Stalcup (1968), Stricker and Ross (1964a), and Wright (1966) have reported test-retest data for MBTI type category scores using several different populations. While the proportion of agreement between the original and the retest type classifications are significant, these results must be received with caution. Myers (1962) while reporting test-retest reliabilities in the 80's, .85 (EI), .84 (SN), .81 (TF), and .82 (J-P) for most populations she notes that we cannot be sure if the reliability of the Indicator or the person is being measured.

The same problem of determining the reliability of the continuous scores for the MBTI is encountered. Generally coefficients are considered significant .76 to .78 (E-I), .74 to .80 (S-N), .64 to .74 (T-F), and .78 to .84 (J-P) , however, female student scores are reported as more consistent than males. It is suggested that more research involving long-range studies of both males and females are needed. Correlations of scores received by 47 male college students were reported as .79 on the E-I scales, .58 on the S-N scales, and 60 correlation on the T-F scales. It would appear from both studies that the two instruments which purport to measure Jungian typology do, in fact, measure similar constructs.

Carlyn (1977) states that there is moderate support for the predictive validity of the MBTI. Citing studies by Stricker, Schiffman and Ross, and Saunders, she reports the use of the MBTI in predicting the relative likelihood of adjustment of a small group of theology students and the G.P.A. and drop-out rate for three samples of freshmen college students. The Saunders study used a small sample and had confounding variables, but the results supported the predictive validity of the MBTI in its use with theology students. The Stricker et al. study reported low predictive ability of the instrument when used to predict freshmen G.P.A. and drop-

out rate. Goldschmid (1967) was successful in predicting college majors of undergraduates based on Indicator scores. Sonary (1966) predicted grades and course choices for entering freshmen using the MBTI.

Both factor analysis and correlation studies have been used to investigate the relationship between the Myers-Briggs Type Indicator and other instruments as a means of supporting the construct validity of the MBTI. Saunders (1960c) compared the continuous MBTI scores of 1132 subjects with their scores on the Allport-Vernon-Lindzey Study of Values (AUL) an instrument based on Spranger's theory of types. Significant correlations were reported on 12 of the 16 predicted hypotheses lending support to the thesis that the MBTI and the AUL are measuring relating construct.

Carlyn (1977) in a review article reports studies by Ross and Madison, Wilder, and Suddiford which used factor analysis to identify substantial loadings on different factors. Carlyn regards the results of these studies as lending support to Myers and Briggs' premise of a four dimensional interlocking structure of personality.

Richek and Brown (1968) conducted a study designed to investigate the phenomenal correlates of the Jungian types. An additional purpose of the study was to derive support for the construct validity of the MBTI and the Brown Self-Report Inventory (SRI), a 48-item instrument which provides measures on eight aspects of the phenomenol world. Correlating the scores of 148 female volunteers, they report that the relationships between the two instruments was strong enough to support the construct validity of each.

Bruhn, Bunce, and Greaser (1978) tested 98 physician assistants and 61 pediatric nurse practioners using the Internal-External Locus of Control Scale, Intolerance of Ambiguity Scale, and the MBTI. A significant

moderate correlation was demonstrated between Judgment Perception and Internal-External control among nurse practitioners. Judging types tended to perceive themselves as internally controlled and perceptive types as externally controlled.

Carskadon and Knudson (1978) tested for relationships between conceptual systems as measured by the O. J. Harvey "This I Believe" instrument and psychological types as measured by the Myers-Briggs Type Indicator. The authors hypothesized sensing types would tend to be concrete and elementary in their conceptualization. Intuitives were expected to be more abstract. Higher proportions of sensing types were found in the lower conceptual types and higher proportions of intuitives were found in the higher systems. The authors concluded that the results support the construct validity of the MBTI.

Numberous studies have been conducted comparing the scores on the MBTI and other tests. Carlyn (1977) suggests that a wealth of circumstantial evidence has been gathered and the results appear to be consistent with Jungian theory. Extraverts have been reported to be more competitive, talkative, gregarious, and impulsive than introverts. Studies suggest that extraverts may have stronger needs for dominance, exhibition, and affiliation. Introverts generally prefer to reflect before acting and they enjoy working alone. They tend to do better than average on tests of aptitude, abstract reasoning, and ability.

Carlyn (1977) also cites studies that have found Sensing types prefer jobs that tend to be practical. They are described as pragmatic, cooperative, and willing to take directions, prefering to proceed in an orderly fashion in the achievement of goals. Intuitives prefer novelty and change and jobs that allow them autonomy. They are further described as being

imaginative and creative, scoring high on the Aesthetic and Theoretical scales of the AUL.

Judging types have been found to be responsible, industrious, over-achieving, prefering order and jobs that emphasize those skills. Perceptive types are associated with measures of spontaneity, flexibility, open-mindedness, impulsivity, and autonomy. In contrast to judging types they place a high emphasis on play over work and prefer professions such as writing, art and music.

Thinking types tend to have strong needs for order, autonony, dominance, achievement, and endurance. They are described as objective, analytical, and logical in making decisions. Feeling types appear to be more nuturing and have a higher need for affiliation. They tend to have strong values concerning interpersonal relationships.

Studies indicating the preference of types to certain professions are numerous (Myers, 1962; Miller 1966). In general, they demonstrate that individuals select professions that emphasize the characteristics of their type and that others select themselves out of professions emphasizing characteristics other than their type.

Stricker and Ross (1963) reported the independence of the E-I, S-I, and T-F scales but note a moderate relationship between the J-P scales and the S-I and T-F scales. Carlyn (1977, p.471) states that while the question of interaction of scales is not settled,

> The numerous studies of construct validity summarized above suggest that the individual scales of the Myers-Briggs Type Indicator measure important dimensions of personality which seem to be quite similar to those postulated by Jung . . . The Indicator appears to be a reasonably valid instrument which is potentially useful for a variety of purposes.

In summary, it would appear that the MBTI adequately measures the constructs of type postulated by Jung. The research appears equivocal concerning the construct validity of the J-P scale. Further research on the instrument's reliability as well as the construct validity of the J-P scale seems warranted. The instrument would seem to be sufficiently reliable and valid, however, to warrant its use in research for which a measure of Jung's typology is desired.

Hypotheses

Three kinds of hypotheses have been generated. The deductive hypothoses are based on potential associations between descriptions of MBTI type behavior and performance on ability subtests of the WAIS. Thus, differential performance on WAIS subtests are deduced from behavioral descriptions of MBTI type.

Deductive Hypotheses

A. Feeling types (MBTI) are able to see and appreciate the qualitative differences of situations and things and base judgments on their subjective value of those differences. Thinking types seek to make impersonal decisions using their ability to see things in terms of black and white. The Similarities subtest (WAIS) involves the ability to perceive abstract relationships, to see things in shades of grey, and to appreciate the qualitative differences in things. Therefore . . .

Deductive Hypothesis A: Feeling types on the MBTI will score higher on the Similarities subtest (WAIS) than those scoring as Thinking types.

B. In the Judging type (MBTI) in order to come to a conclusion, ongoing perception must be shut off for a period of time. The evidence is collected and anything more is irrelevant and immaterial since the goal is to arrive at a conclusion. The Perceiving type (MBTI) places importance on the process of deciding. Conclusions are postponed in

order to ensure the collection of all pertinent information. The Comprehension subtest reflects cultural conventions and values which serve as the basis for the Judging type decisions. Therefore . . .

Deductive Hypothesis B: Judging types will score higher on the Comprehension subtest (PAS) than Perceiving types.

C. Information, as measured by the Wechsler subtest, serves as the basis for the ideas of association that the Intuitive MBTI) uses as a means of perceiving possibilities. Sensing types do not utilize a stored data base of information as their perceptions are immediately processed through the senses. Therefore . . .

Deductive Hypothesis C: Intuitives (MBTI) will score higher than Sensors (MBTI) on the Information subtest (PAS).

D. Thinking (MBTI) represents the organization of facts and ideas, while feeling reflects the bestowing of a personal subjective value on things. Thinking types will do better on the arithmetic subtest, as they are more inclined and disciplined to carry out the logical processes required to manipulate the symbols used in the subtest. Therefore . . .

Deductive Hypothesis D: Thinking types (MBTI) will score higher than Feeling types (MBTI) on the Arithmetic subtest (WAIS).

Descriptive Hypotheses

The descriptive hypotheses are based on apparent similarities between the descriptions of attributes for both the MBTI and PAS. The intent of these hypotheses is to establish whether the descriptions of attributes actually represent similar constructs.

A. Extraverts (MBTI) direct their attention to the elements of their environment; people, events, and experiences. They are described as

outgoing and people oriented. Externalizers (PAS) are stimulated most by contact with the external world. The environment provides the primary focus of their attention and they are active in responding to people. Therefore . . .

Descriptive Hypothesis A: Basic Level Externalizers will score as Extraverts on the MBTI.

B. Introverts (MBTI) focus mainly on subjective perceptions. They are described as being withdrawn socially often engaging in thought. Internalizers (PAS) are focused inward responding to the internal world of abstract ideas and thoughts. They prefer to think than to do and as a result appear passive. Therefore . . .

Descriptive Hypothesis B: Basic Level Internalizers will score as Introverts on the MBTI.

C. Sensing (MBTI) reflects the use of sense organs by the individual to perceive externally or internally derived stimuli. Perceptions of Sensing types (MBTI) are very literal with little imagination to speculate about future possibilities. Regulared (PAS) individuals react to a limited number of specific well-defined stimuli on which they can concentrate and focus.

Descriptive Hypothesis C: Basic Level Regulated individuals will score as Sensing types on the MBTI.

D. Intuitive types (MBTI) use an unconscious perception of subliminal stimuli. There is no obvious or direct relationship between the stimuli and resulting impressions of an intuitive type. They are characterized by imagination and awareness of possibilities. Flexible (PAS) individuals are described as imaginative, sensitive, insightful, and intuitive. Therefore . . .

Descriptive Hypothesis D: Basic Level Flexible individuals will score as Intuitive types on the MBTI.

Global Hypothesis

The Myers-Briggs Type Indicator and the Personality Assessment System attempt to describe a similar phenomenon, the development of normal personality. As a result, the final exploration is intentially broad so as to allow for the emergence of unspecified relationships between the two systems.

Global Hypothesis: Statistical procedures will be employed which provide maximum opportunity to discover psossibly complex associations and patterns.

Method

This study proposes that the personality constructs presented by Gittinger in the Personality Assessment System and measured by the subtests of the Wechsler Adult Intelligence Scale are similar to the constructs described by the Myers-Briggs Type Indicator. The hypotheses will be tested by examining the relationship between the two measures using a group of high school students as subjects.

Subjects:

The data used in this study were collected by David Saunders, Ph.D. in 1958 as part of a project sponsored by the Educational Testing Services. The original project used only males attending high school in the Philadelphia metropolitan area. The students were first selected on the basis of providing approximately equal numbers of all the MBTI single scale types. The WAIS was then administered to these students and PAS profiles were derived. There were 170 students in the project ranging in age from 16 to 18 years of age.

Table 2 indicates the numbers of students in each MBTI category that will be used in this study. In order to improve the stability of the data,

cut off scores were determined for each of the 4 MBTI continua based on percentile norms for high school students. Scores falling in the middle third for each MBTI continuum were eliminated, as they reflect relatively weak scores. Only scores falling in the outer one-third of each end of the four continua were used. As a result, total numbers of scores vary for each type.

TABLE 2

E	71	S	56	T	74	J	57
I	53	N	60	F	57	P	57
TOTAL	124		116		131		114

Data Analysis:

Each of the four deductive hypotheses will be tested, using T-tests for mean differences between groups of WAIS scaled scores and MBTI type categories. The four descriptive hypotheses will be tweste using Chi square tests on the PAS categories and the MBTI types. A canonical correlation will be used to test the global hypothesis using the WAIS scaled scores and the MBTI type scores as variables.

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APPENDIX B

Table 7

PAS Personality Factors

Subtest		Deviation from Normal Level										Notes	
		-6	-5	-4	-3	-2	-1	NL	+1	+2	+3		
Digit Span		E+	E	E	E	I	I	I	I+	I+	I+		a
Arithmetic		u+	u	u	u	c	c	c	c+	c+	c+		b
Information		u+	u+	u+	u	u	u	c	c	c	c+		
Block Design		F+	F+	F+	F	F	F	R	R	R	R+		
Similarities	R	u+	u+	u+	u	u	u	c	c	c	c+	R	c
	F	c+	c+	c+	c	c	c	u	u	u	u+	F	
Comprehension		u+	u+	u+	u	u	u	c	c	c	c+		
Picture Arr.		U+	U	U	U	A	A	A	A+	A+	A+		
Picture Completion	A	c+	c	c	c	u	u	u	u+	u+	u+	A	d,e
	U	u+	u	u	u	c	c	c	c+	c+	c+	U	
Obj. Assembly		c+	c+	c	c	c	u	u	u	u+	u+		
Digit Symbol		u+	u+	u	u	u	c	c	c	c	c+		
		L+	L+	L	L	M	M	M	H	H	H+		

Notes: a. If D is 3 points below NL and A is 3 or more points below D, the formulation is Iu (or Iu+, if Arithmetic is u+).

b. Regardless of NL, a weighted score on A exceeding 11 is never u.

c. Use Row R if BD is R; use Row F if BD is F.

d. Use Row A if PA is A; use Row U if PA is U.

e. If NL is 11 or below, use the following conversion for PC:

	-6	-5	-4	-3	-2	-1	NL	+1	+2	+3
A	c+	c+	c	c	c	u	u	u+	u+	u+
U	u+	u+	u	u	u	c	c	c+	c+	c+